Unit: Introduction • Examination 1

Name _____
Class/Period _____
Date _____

Matching: Match the vocabulary terms in column A with the definitions in column B. Write the letter of the definition in column B in the space next to the terms in column A.

A	B
_____ 1. Bacteria	A. A measure of the water in foods that is not bound to food molecules and can support the growth of bacteria, yeasts, and molds.
_____ 2. Virus	B. A term describing bacterial growth and the doubling of numbers at each generation.
_____ 3. Pathogen	C. Microorganisms that can be either helpful or harmful in foods.
_____ 4. Parasite	D. Bacteria that are added to foods to change their composition, flavor, and/or appearance.
_____ 5. Foodborne illness	E. Sickness caused by the presence of pathogens in foods.
_____ 6. Starter culture	F. A type of shorthand used by scientists to express very large numbers.
_____ 7. Scientific notation	G. The smallest living organism on earth. One type can cause Hepatitis A if present in foods.
_____ 8. Water activity	H. Tiny microscopic animals such as amoebas. Can cause foodborne illness.
_____ 9. Exponential multiplication	I. Harmful microorganisms that can make people sick.
_____ 10. Cocci	J. A round-shaped bacterium.

Short answer and fill in the blank: Write short answers or fill in the blank to the following questions and statements. Use complete sentences when answering questions.

1. Draw a diagram representing the manufacture of cheese. How do helpful microorganisms work to improve cheese?

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by J. Lynne Brown, Melanie Cramer, and Kristine Barlow,College of Agricultural Sciences, The Pennsylvania State University.

2. In class, we talked about *Listeria monocytogenes*, *Staphylococcus aureus*, and *Escherichia coli*. Describe what kinds of foods each of these pathogens are found in and what symptoms of foodborne illness they cause.

3. If it takes bacteria 20 minutes to divide once, how long would it take for 15 divisions? How many bacteria would you get if you started out with two and waited 400 minutes?

4. List three methods of food preservation. For each method, give an example of a food that is preserved that way. (30 points)
   1.

   2.

   3.

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5. How would you express the following using scientific notation?
   A. 456

   B. 17,000,000

   C. 1

6. A long time ago cheese was made by adding a sample of raw milk, left out overnight, to fresh milk to make cheese. Why do you think this process worked to make the cheese, and why don't we use that method today?

7. After looking at the baseball diamond overhead, choose one of the positions on the Foods Safety Team and list at least three responsibilities of that team member. For responsibilities of Food Safety Team Members, refer to Teacher information sheets 1 and 3.

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Unit: Introduction • Examination 1 Key

Unit: Introduction

Matching: Match the vocabulary terms in column A with the definitions in column B. Write the letter of the definition in column B in the space next to the terms in column A.

C	1. Bacteria	A. A measure of the water in foods that is not bound to food molecules and can support the growth of bacteria, yeasts, and molds.
G	2. Virus	B. A term describing bacterial growth and the doubling of numbers at each generation.
I	3. Pathogen	C. Microorganisms that can be either helpful or harmful in foods.
H	4. Parasite	D. Bacteria that are added to foods to change their composition, flavor, and/or appearance.
E	5. Foodborne illness	E. Sickness caused by the presence of pathogens in foods.
D	6. Starter culture	F. A type of shorthand used by scientists to express very large numbers.
F	7. Scientific notation	G. The smallest living organism on earth. One type can cause Hepatitis A if present in foods.
A	8. Water activity	H. Tiny microscopic animals such as amoebas. Can cause foodborne illness.
B	9. Exponential multiplication	I. Harmful microorganisms that can make people sick.
J	10. Cocci	J. A round-shaped bacterium.

Short answer and fill in the blank: Write short answers or fill in the blank to the following questions and statements. Use complete sentences when answering questions.

1. Draw a diagram representing the manufacture of cheese. How do helpful microorganisms work to improve cheese?

   See diagram on overhead #3 of Helpful Microorganisms Lesson plan.

   Helpful microorganisms work to improve cheese by causing a curd to form and making the holes in Swiss cheese.

2. In class we talked about *Listeria monocytogenes*, *Staphylococcus aureus*, and *Escherichia coli*. Describe what kinds of foods each of these pathogens are found in and what symptoms of foodborne illness they cause.

   Listeria monocytogenes: Found in milk, soft cheeses, and vegetables. Causes mild flu symptoms in most people but can cause abortion or death in pregnant women or sick people.

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Staphylococcus aureus: Found in meat dishes, potato salad, and cream-filled foods. Causes nausea, vomiting, and diarrhea.

Escherichia coli: Found in meat, cider, and sprouts. Causes diarrhea, fever, and sometimes death.

3. If it takes bacteria 20 minutes to divide once, how long would it take for 15 divisions? How many bacteria would you get if you started out with two and waited 400 minutes?
   20 x 15 = 300
   400/20 = 20 divisions and 2^{20}= 2,097,152 or 2.10 x 10^{6}

4. List three methods of food preservation. For each method, give an example of a food that is preserved that way. (30 points)
   1. *Decreasing the water activity. ex: crackers*
   2. *Adding preservatives. ex: packaged snack cakes*
   3. *Temperature control. ex: ice cream*

5. How would you express the following using scientific notation?
   A. 456 = 4.56 x 10^{2}
   B. 17,000,000= 1.70 x 10^{7}
   C. 1 = 1.0 x 10^{0}

6. A long time ago cheese was made by adding a sample of raw milk, left out overnight, to fresh milk to make cheese. Why do you think this process worked to make the cheese, and why don't we use that method today?

   Bacteria are commonly found in raw milk, and leaving the milk out overnight allowed starter culture bacteria to grow. We don't use that process today because pathogens may also grow in milk left out overnight and contaminate the finished cheese product.

7. After looking at the baseball diamond overhead, choose one of the positions on the Foods Safety Team and list at least three responsibilities of that team member. For responsibilities of Food Safety Team Members, refer to Teacher information sheets 1 and 3.

   Government Agencies
   Farmers
   Processors
   Grocery and Retail
   Consumers
   Restaurant and Institutional

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